UNITED STATES PATENT AND TRADEMARK OFFICE

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 November 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5,7,8,10,11,13-19 and 23-26* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,7,8,10,11,13-19 and 25* is/are rejected.

7)☒ Claim(s) *23,24,and 26* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 April 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

DETAILED ACTION

Claims 1-5, 7-8, 10-11, 13-19, and 23-26 have been examined.

This action is made **Non-Final**.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-5, 7, 10-11, 13-18, and 25 are rejected under 35 U.S.C. 103(a) as being

unpatentable over US Patent No. 4,831,512 of Nakai et al. referred hereinafter "Nakai" in view

of US Patent No. 5,544,077 of Hershey.

In regards to claim 1, Nakai discloses:

generating an active message for processing by the active processor domain (see column

2 lines 40-45 and column 5 lines 19-23);

generating a modified active message by providing an active time indicator associated

with the active message for each of the plurality of active processes (see column 2 lines 63-66

and column 5 lines 19-23); and

generating a statistical characteristic for the modified active message (see column 6 lines

45-55);

However, Nakai fails to disclose:

generating a stand-by message for processing in a stand-by processor domain, the stand-by processor domain comprising a plurality of stand-by processes;

generating a modified stand-by message by providing a stand-by time indicator for at least one process of the plurality of stand-by processes in the stand-by domain.

based on the statistical characteristic, interchanging the stand-by processor domain with the active processor domain.

Hershey discloses a standby running the same program as the primary (see column 2 lines 30-45). Nakai disclose generating a message for processing in a processor domain, the processor domain comprising a plurality of processes (see column 2 lines 63-66 and column 5 lines 19-23) and generating a modified message by providing a time indicator for at least one process of the plurality of processes in the domain (see column 2 lines 63-66 and column 5 lines 19-23). If Nakai discloses a standby running the same program as the primary, as per teaching of Hershey, then Nakai in view of Hershey discloses generating a stand-by message for processing in a stand-by processor domain, the stand-by processor domain comprising a plurality of stand-by processes and generating a modified stand-by message by providing a stand-by time indicator for at least one process of the plurality of stand-by processes in the stand-by domain. Furthermore, Nakai discloses generating a statistical characteristic to determine an error (see column 6 lines 45-55) and Hershey discloses wherein if the standby senses the primary failing, the standby is switchover to perform the functions of the primary (see column 2 lines 30-45), thus indicating based on the statistical characteristic, interchanging the stand-by processor domain with the active processor domain.

It would have been obvious to one of ordinary skill in the art at the time the invention

was made to modify the teachings of Nakai to have a standby running the same programs as the

primary or active, wherein if the standby senses the primary failing, the standby is switchover to

perform the functions of the primary. A person of ordinary skill in the art at the time the

invention was made would have been motivated because Nakai discloses detecting errors or fault

(see column 6 lines 20-30), and having a standby, as per teachings of Hershey, allows for

continued processing in the event of failure of the primary or active (see column 2 lines 40-45).

In regards to claim 2, Nakai discloses:

the step of determining astatus of the active processor domain in response to the active

time indicator (see column 6 lines 20-58).

In regards to claim 3, Nakai discloses:

wherein a respective active time indicator is associated with each process of the plurality

of processes, and wherein the step of determining the status of the active processor domain is

responsive to more than one of the active time indicators (see column 4 lines 1-8 and column 6

lines 20-58).

In regards to claim 4, Nakai discloses:

wherein the active time indicator comprises a time-stamp indicating the time the at least

one process completed processing the active message (see column 4 lines 35-40).

In regards to claim 5, Nakai discloses:

wherein the active time indicator comprises a time-stamp indicating the time elapsed

while the at least one process processed the active message (see column 6 lines 34-40).

In regards to claim 7, Nakai discloses:

wherein the step of determining the statistical characteristic comprises generating a time average of the duration of the at least one process of the plurality of processes for a plurality of active messages (see column 6 lines 45-55).

In regards to claim 10, Hershey discloses a standby that runs the same programs as the primary or active (see column 2 lines 30-45). Since Nakai discloses determining the status of the active processor domain is responsive to the active time indicator, Nakai in view of Hershey discloses determining the status of the stand-by processor domain is responsive to the stand-by time indicator.

In regards to claim 11, Hershey discloses a standby that runs the same programs as the primary or active (see column 2 lines 30-45). Since Nakai discloses wherein a respective active time indicator is associated with each process of the plurality of processes, and wherein the step of determining the status of the active processor domain is responsive to at least two of the active time indicators (see column 4 lines 1-8 and column 6 lines 20-30), Nakai in view of Hershey discloses a respective stand-by time indicator is associated with each process of the plurality of stand-by processes of the stand-by domain and the step of determining the status of the stand-by processor domain is responsive to at least two of the stand-by time indicators.

In regards to claim 13, Nakai discloses:

an active processor domain, the active processor domain having at least one active processor, the at least one active processor executing at least one active process, the at least one active process receiving an active message and generating a modified active message in response thereto (see figure 2 and column 2 lines 63-66 and column 5 lines 19-23);

an active time-stamp mechanism in communication with the at least one active process

and for providing an active time indicator for each of the at least one active processor for use in

generation of the modified active message (see column 2 lines 63-66 and column 5 lines 19-23);

However, Nakai fails to disclose:

a stand-by processor domain, the stand-by processor domain having at least one

processor, the at least one processor executing at least one stand-by process, the at least one

stand-by process receiving a stand-by message and generating a modified stand-by message in

response thereto,

a stand-by time-stamp mechanism in communication with the at least one stand-by

process and for providing a stand-by time indicator for use in generation of the modified stand-

by message.

a redundancy manager in communication with the active processor domain and the stand-

by processor domain, the redundancy manager interchanging, based on a statistical characteristic

for the modified active message, the active processor domain with the stand-by processor

domain

Hershey discloses a standby running the same program as the primary (see column 2 lines

30-45). Nakai disclose a processor domain, the processor domain having at least one processor,

the at least one processor executing at least one process, the at least one process receiving a

message and generating a modified message in response thereto (see figure 2 and column 2 lines

63-66 and column 5 lines 19-23) and a time-stamp mechanism in communication with the at

least one process and for providing a time indicator for use in generation of the modified

message (see column 2 lines 63-66 and column 5 lines 19-23). If Nakai discloses a standby

running the same program as the primary, as per teaching of Hershey, Nakai in view of Hershey

discloses a stand-by processor domain, the stand-by processor domain having at least one

processor, the at least one processor executing at least one stand-by process, the at least one

stand-by process receiving a stand-by message and generating a modified stand-by message in

response thereto and a stand-by time-stamp mechanism in communication with the at least one

stand-by process and for providing a stand-by time indicator for use in generation of the

modified stand-by message. Furthermore, Nakai discloses generating a statistical characteristic to

determine an error (see column 6 lines 45-55) and Hershey discloses wherein if the standby

senses the primary failing, the standby is switchover to perform the functions of the primary (see

column 2 lines 30-45), thus indicating a redundancy manager in communication with the active

processor domain and the stand-by processor domain, the redundancy manager interchanging,

based on a statistical characteristic for the modified active message, the active processor domain

with the stand-by processor domain.

It would have been obvious to one of ordinary skill in the art at the time the invention

was made to modify the teachings of Nakai to have a standby running the same programs as the

primary or active, wherein if the standby senses the primary failing, the standby is switchover to

perform the functions of the primary. A person of ordinary skill in the art at the time the

invention was made would have been motivated because Nakai discloses detecting errors or fault

(see column 6 lines 20-30), and having a standby, as per teachings of Hershey, allows for

continued processing in the event of failure of the primary or active (see column 2 lines 40-45).

In regards to claim 14, Nakai discloses:

wherein the redundancy manager determines a status of the active processor domain in response to the active time indicator (see column 6 lines 20-58).

In regards to claim 15, Nakai discloses

wherein the active time indicator comprises a time-stamp indicating a time at which the at least one process completes processing the active message (see column 4 lines 35-40).

In regards to claim 16, Nakai discloses

wherein the active time indicator comprises a time-stamp indicating the time elapsed while the at least one active processor processes the active message (see column 6 lines 34-40)

In regards to claim 17, Nakai discloses

wherein the redundancy manager determines the status of the active processor domain in response to the statistical characteristic (see column 6 lines 45-55).

In regards to claim 18, Nakai discloses

wherein the statistical characteristic comprises a time average of the duration of the at least one active process (see column 6 lines 45-55).

In regards to claim 25, Nakai discloses

comparing the statistical characteristic to a predetermined threshold value (see column 6 lines 45-55).

Claims 8 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakai in view of Hershey and in further view of US Patent No. 6,073,089 of Baker et al. referred hereinafter "Baker".

In regards to claim 8, Nakai in view of Hershey fails to explicitly disclose:

wherein the statistical characteristic comprise a standard deviation from the time average.

Baker discloses using standard deviation to detect faults or errors (see column 4 lines 15-33).

It would have been obvious to one of ordinary skill in the art at the time the invention was made wherein the statistical characteristic comprises a standard deviation from the time average. A person of ordinary skill in the art at the time the invention was made would have been motivated because Nakai discloses determining an error or fault (see column 6 lines 20-30), and standard deviation, as per teaching of Baker, is known and used method to indicate an error or fault (see column 4 lines 15-33).

In regards to claim 19, Nakai in view of Hershey fails to explicitly disclose:

wherein the statistical characteristic comprise a standard deviation of the duration of the at least one active process.

Baker discloses using standard deviation to detect faults or errors (see column 4 lines 15-33).

It would have been obvious to one of ordinary skill in the art at the time the invention was made wherein the statistical characteristic comprises a standard deviation from the time average. A person of ordinary skill in the art at the time the invention was made would have been motivated because Nakai discloses determining an error or fault (see column 6 lines 20-30), and standard deviation, as per teaching of Baker, is known and used method to indicate an error or fault (see column 4 lines 15-33).

Allowable Subject Matter

Claims 23, 24, and 26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

Applicant's arguments filed November 3, 2004 have been fully considered but they are not deemed to be persuasive.

In response to applicant's argument "...The Office Action takes the position that because Hershey does shows a stand-by processor ready for use during a hot swap, that the combination of the these two publications renders obvious the claimed invention.

Applicants disagree. The Nakai publication fails to discuss any type of stand-by processor, or any type of switching to an alternate processor. That leaves a pretty big gap between the Nakai publication and the claimed invention. For example, nothing in Nakai talks about a stand-by processor. Nothing in Nakai discusses or suggests using a generated statistical characteristic for a modified active message to interchange a stand-by processor with an active processor and nothing in Nakai discusses having a stand-by processor generate a modified stand-by message.

Hershey fails to bridge this gap.

Nothing in Hershey discusses or suggests using a generated statistical characteristic for a modified active message to interchange a stand-by processor with an active prùcessor. Nothing in Nakai teaches this either...." (see page 7 of Remarks), examiner respectfully disagrees.

Hershey discloses a standby running the same program as the primary (see column 2 lines 30-45). Nakai disclose generating a message for processing in a processor domain, the processor domain comprising a plurality of processes (see column 2 lines 63-66 and column 5 lines 19-23) and generating a modified message by providing a time indicator for at least one process of the plurality of processes in the domain (see column 2 lines 63-66 and column 5 lines 19-23). If Nakai teaching included a standby running *the same program* as the primary, as per teaching of Hershey, then Nakai in view of Hershey discloses generating a stand-by message for processing in a stand-by processor domain, the stand-by processor domain comprising a plurality of stand-by processes and generating a modified stand-by message by providing a stand-by time indicator for at least one process of the plurality of stand-by processes in the stand-by domain. Furthermore, Nakai discloses taking a time interval of the time stamps, indicating generating a statistical characteristic, and determining a error of the processor if the timer interval is not within an allowable ranges(see column 6 lines 49-58), indicating generating a statistical characteristic to determine an error, and Hershey discloses if the standby senses an error in the primary, the standby is switchover to perform the functions of the primary (see column 2 lines 30-45), thus indicating interchanging the stand-by processor domain with the active processor domain. Examiner maintains his rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Emerson C. Puente whose telephone number is (571) 272-3652. The examiner can normally be reached on 8-5 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert W. Beausoliel can be reached on (571) 272-3645. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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